



Nebraska

Epidemiology

Nebraska Health and Human Services System P.O. Box 95007 Lincoln, NE 68509-5007
Epidemiology Reports are available on the Nebraska HHS Website at:
<http://www.hhs.state.ne.us/epi/epiindex.htm>

TO: Nebraska Healthcare Providers

FROM: Thomas J. Safraneck, M.D., State Epidemiologist, 402-471-2937

DATE: July 3, 2006

RE: Human Surveillance for West Nile Virus, Nebraska, 2006

Arthropod-borne virus (“arbovirus”) season is upon us. The most important arbovirus infection in Nebraska is West Nile virus. Between 2002 and 2005, public health officials received annual WNV reports on 174, 2177, 54, and 188 patients, respectively. Health care providers can expect to see this disease in Nebraska residents this summer, and should consider this diagnosis in patients with symptoms consistent with WNV infection. For about 80% of humans infected with WNV, the condition is asymptomatic. For the 20% of WNV-infected persons who develop symptomatic illness, the vast majority develop WNV fever. Less than 1% develop encephalitis, meningitis, and other less common clinical syndromes.

The spectrum of WNV illness includes:

WNV Fever: A syndrome which may persist for several weeks manifesting as a febrile illness of sudden onset, often accompanied by skin rash, fatigue, malaise, anorexia, nausea, vomiting, eye pain, headache, and myalgia.

Meningitis/encephalitis: Neurologically invasive WNV is clinically comparable to other viral meningitis/encephalitis and manifests as meningeal inflammation (headache plus nuchal rigidity, photo/phonophobia, and pleocytosis). Encephalitis manifests with objective neurologic deficits, ranging from focal neurologic signs (e.g., cranial nerve abnormalities, abnormal reflexes) to more global neurologic dysfunction (e.g., disorientation, confusion, coma, etc).

Other: Additional clinical scenarios associated with WNV include acute flaccid paralysis, severe muscle weakness, and Guillain-Barre syndrome.

There are several experimental treatment regimens that should be considered for persons with severe and progressive WNV infection. Contact my office for information

regarding treatment options for such patients. In addition, researchers at the University of Nebraska Medical Center are enrolling persons with WNV infection in a genetic study designed to identify cause of variation in severity of illness following WNV infection. Nebraska residents are invited to participate in this study.

Human Surveillance and Testing

We estimate that the background seropositivity for WNV in Nebraskans from exposure during the past four summers may range as high as 10%, depending on the region of the state. The majority of these infections were asymptomatic, and are likely to remain seropositive by IgG antibody test.

Physicians who order and interpret WNV tests should follow these guidelines:

- 1) Order serum **IgM AND IgG antibodies**. If WNV meningitis or encephalitis is suspected, in addition to serum antibodies, order a spinal fluid IgM antibody. Costs for WNV testing in persons **with suspected neuroinvasive disease** will be covered by Nebraska Health & Human Services, provided the specimens are collected between June 1-October 31, 2006 and tested through the NE Public Health Laboratory using an NPHL requisition (<http://www.hhss.ne.gov/wnv>)
- 2) Because serum IgM antibody can persist for up to 16 months in some patients, when a patient tests positive for both IgM and IgG antibodies, a “convalescent” serum (collected at least 14 days following the initial specimen) should be obtained. A stable antibody titer on acute and convalescent specimens is suggestive of infection in the distant past. Rising IgM and IgG titers between the acute and the convalescent specimens are consistent with acute infection.
- 3) Serum which tests positive for IgM and negative for IgG is consistent with acute WNV infection. CSF which tests positive for IgM is consistent with acute meningitis/encephalitis. A positive IgG and a negative IgM antibody test is consistent with infection in the distant past.
- 4) Because the serology test for WNV is non-specific and can cross-react with other Flavivirus infections, the Nebraska Public Health Laboratory will send positive WNV specimens obtained early in the season to the CDC for confirmatory testing (microsphere-based immunoassay or plaque-reduction neutralization test). If WNV infection becomes more widespread, as was the case in 2003, the MAC-ELISA serology would suffice to make the diagnosis.

Please **report any positive WNV tests results to your local health department** as shown on the attached map. Contact NHHSS for additional assistance at fax number 402-471-3601 or by phone 402-471-0935. Additional information on WNV can be found in the following references:

- 1) <http://www.cdc.gov/ncidod/EID/vol11no08/05-0289b.htm>
- 2) <http://www.cdc.gov/ncidod/dvbid/westnile/index.htm>

